

<b>SEMESTER</b> <i>Seventh</i>	<b>DEPARTMENT</b> <i>Control Engineering</i>	<b>COURSE TITLE</b> <i>Artificial Intelligent</i>
<b>COURSE CODE</b> <i>EC709</i>	<b>HOURS</b> 3 <b>UNITS</b> 3	<b>COURSE SPECIFICATIONS</b> <i>Theoretical Content</i>
<p>The module covers the basic concepts of AI with application to case study systems. The main two subjects are the fuzzy logic and neural network. The student should be able to use AI inn intelligent modelling and control. A computer software will be used in the course (Matlab fuzzy logic toolbox and neural network toolbox).</p>		
<p><b>1. Introduction to AI.</b></p>		
<p><b>2. Neural Networks:</b></p> <ul style="list-style-type: none"> <li>➤ Artificial neural network,</li> <li>➤ preceptron models,</li> <li>➤ multilayer perceptron model,</li> <li>➤ and training of multilayer perceptrons.</li> <li>➤ Application: The instructor should choose real engineering problem and solve it using the Neural Networks. (Power Plant, image processing, industrial and control applications).</li> </ul>		
<p><b>3. Fuzzy logic:</b></p> <ul style="list-style-type: none"> <li>➤ Fuzzy sets,</li> <li>➤ fuzzy relations,</li> <li>➤ membership functions,</li> <li>➤ defuzzifications,</li> <li>➤ fuzzy rules.</li> <li>➤ and fuzzy decision making.</li> <li>➤ Application: The instructor should choose real engineering problem and solve it using the Fuzzy logic (Power Plant, digital filters, industrial and control applications).</li> </ul>		

#### ***4. Genetic algorithms, evolutionary computing and their applications***

##### **Learning Outcomes**

- The student should be able to model any system using the fuzzy logic.
- The student should be able to model any system using the neural.
- The student should be able to design a fuzzy logic controller.
- The student should be able to design a neural network controller.
- The student should be able to appreciate the application of the genetic algorithms and the evolutionary programming in the control and modelling.

##### **References?**